

AFIT/GCM/LAR/96S-4

**A STUDY OF THE EDUCATIONAL,
EXPERIENCE, AND MANAGERIAL PERFORMANCE
REQUIREMENTS FOR PREPARING LOGISTICS
COMMANDERS**

THESIS

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AFIT/GCM/LAR/96S-4

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Abstract

For some time, senior logistics leaders have been concerned that logisticians with experience in only one logistics function are unable to create and maintain an integrated, seamless logistics system. The Air Force has recently decided to consolidate logistics career fields at the Field Grade level to ensure future Logistics Group Commanders and other senior logisticians have the broad-base of skills, experience, and knowledge that is needed to effectively manage logistics activities. One important outcome of this consolidation is the adoption of a career progression model in which logistics officers will have experience in at least two logistics functions. Preparing officers for senior leadership requires a concerted effort toward providing relevant job experience and educational development. AFIT's specialized military graduate education plays an important part in this process. This work maps out the specific set of knowledge, skills, and experience that officers need to be successful as logisticians, ensuring AFIT's continued effectiveness.

**A STUDY OF THE EDUCATIONAL, EXPERIENCE, AND MANAGERIAL
PERFORMANCE REQUIREMENTS FOR PREPARING LOGISTICS COMMANDERS**

I. Introduction

Problem Statement

The Air Force has recently decided to consolidate logistics career fields at the Field Grade level to ensure future Logistics Group Commanders and other senior logisticians have the broad-base of skills, experience, and knowledge that is needed to effectively manage logistics activities. Logistics commanders will now lead logistics groups that consist of multiple functions. Before the consolidation, logistics was organized around single a function, or discipline. One outcome of this effort to consolidate the logistics career fields is the adoption of a career progression model in which officers are expected to have experience in at least two of the logistics functions.

For some time, senior leaders have been concerned that logisticians with experience in only one logistics function are unable to see the "big picture" and will be unable to create and maintain an integrated, seamless logistics system (Marquez, 1984). Broadening the experience base of these officers may satisfy some of the knowledge and experience requirements Lt. General Marquez was concerned about. Yet, it is very difficult for officers to learn everything he or she needs to be an effective logistics leader through experience alone. There

simply is not enough time for every prospective Logistics Group Commander to gain detailed experience in every logistics discipline. Education is an effective way to fill in this gap.

Restructuring career progression this way acknowledges that military logisticians manage complex, inter-related functions and control large amounts of money, material, and manpower. More importantly, Air Force logisticians have the responsibility of sustaining and maintaining the USAF war-fighting capabilities. Although the outcome of the military logistics is more lethal than other managerial occupations, the military logistician is basically a manager who fulfills the same basic managerial functions and roles as other managers. Managing complex and often highly technical military systems requires Air Force logisticians to plan, organize, coordinate, and control just as other managers do.

Borman and Brush (1993) analyzed and identified 18 performance dimensions that encompass most managerial activities. They created these categories by pooling the results of dozens of management studies and found the activities managers perform can be grouped into four overarching categories, or mega-dimensions of managerial performance: 1)interpersonal dealings and communication, 2)leadership and supervision, 3)technical activities and the "mechanics of management", and 4)useful personal behavior and skills.

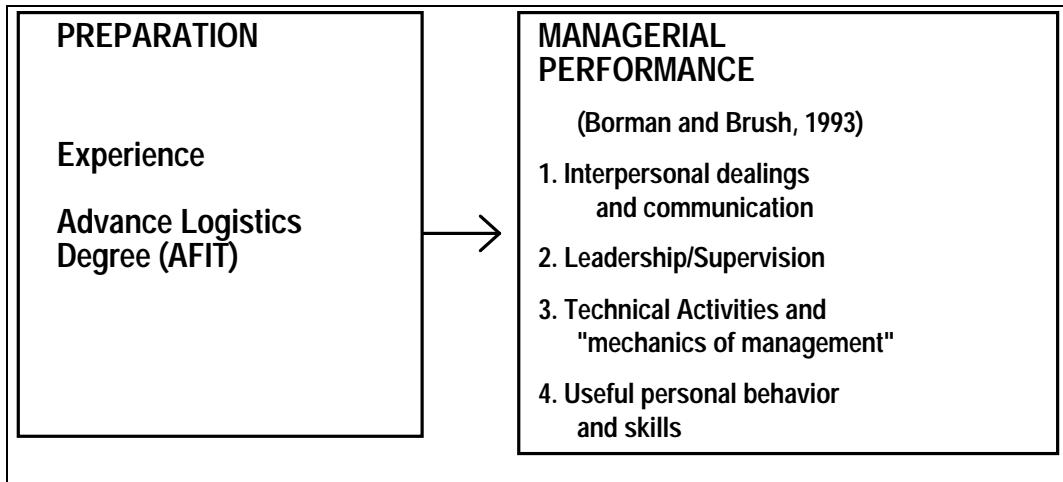


Figure 1. Logistician Preparation and Mission

Because of the unique Air Force environment, preparing officers to fill these roles requires a concerted effort toward providing relevant job experience and educational development. AFIT's specialized military graduate education plays an important part in this process. Ensuring AFIT's continued effectiveness requires continuous effort to map out the specific set of knowledge, skills, and experience officers need to be successful as logisticians.

Overbey [1985] investigated the essential criteria for senior military logisticians to perform basic managerial functions and roles. He concluded that three general factors were essential in preparing young officers to be logistics commanders: professional attributes, experience, and education and training. Subsequent research has found this model useful for military and civilian positions in DOD logistics. This

thesis will evaluate these three dimensions and provide more specific recommendations to guide the design of graduate logistics management programs to support the new emphasis on more general logisticians.

Professional Attributes

The list of characteristics identified in this work is too general to be useful in guiding educational program design or career progression plans. Some examples of these characteristics are: being a leader, a manager, creative, dedicated, and having common sense. This thesis will redefine these qualities and characteristics by using recent research on the dimensions of managerial performance as a guide and develop more specific experience and education requirements.

Experience

Requirements for logistics experience is most often categorized by functional specialty (i.e. aircraft maintenance, supply). These functional specialties are at different levels (e.g. retail, wholesale, or combat logistics). Overbey (1985) interviewed six flag officers and SES using the delphi interview method. His work recommended changing the assignment process so that officers would have functional experience in at least two of the logistics disciplines. It is valuable to get input from the logistics commanders who can best provide useful feedback on the experience requirements for their current positions.

Education and Training

While job experience and Professional Continuing Education (PCE) are important in developing basic technical expertise, advanced education in logistics management is also needed to develop versatile senior logisticians with managerial skills, problem-solving skills and knowledge that go beyond what any one person could experience. Managing complex organizations requires a level of sophistication with analytical techniques and leadership methods that can't be learned on the job. Managing organizations with diverse functions requires a broad understanding of logistics that with career time constraints can best be obtained from logistics management education. Only education is capable of overcoming the stovepiping that logistics leaders have been concerned with for over a decade and only education can efficiently transfer information on a vast array of management theories, tools, and practices. Unfortunately, previous research has not linked specific educational content areas to the performance of managers in logistics.

Thus, there is a need to obtain detailed, practical guidance on how to improve the effectiveness of the (AFIT) graduate programs in logistics. Perhaps the best way of obtaining up-to-date information is to go directly to the source - officers working in Air Force logistics - and ask them what types of experience and educational preparation are most useful in their jobs. My thesis evaluates the relevance and importance of the

logistics management 'core' curriculum and provides recommendations for changes in this and other advanced academic education.

Research Objectives

The objectives of this thesis are:

- 1) determine which types of performance are most important for senior military logisticians to effectively manage diverse logistics activities.
- 2) determine which types of job experience are most important for senior military logisticians to effectively manage diverse logistics activities.
- 3) determine which areas of advanced educational emphasis are most important for senior military logisticians to effectively manage diverse logistics activities.

II. Literature Review

In recent years the Air Force has experienced unprecedented change. Major commands have reorganized, defense appropriations have declined, and the self-sufficient multi-capacity composite wing has become the new combat organization in the Air Force. Through these changes, senior logisticians have sought to create a seamless, integrated logistics support structure. One of the biggest barriers to change has been the compartmentalization of the logistics functions.

Air Force logistics functions have been historically more specialized than logistics in other services. As early as 1965, research has concluded that the Air Force possessed "the most narrowly based" group of logisticians of the three military branches (Kenealy and Canady, 1965). An Air Force Institute of Technology (AFIT) study conducted by Kenealy and Canady [1965] suggested that the development of multi-discipline Air Force logisticians came about more as a result of chance than by systematic design. Kenealy and Canady found that the Navy systematically exposes their logistics officers to the entire spectrum of logistics functions. A later study (Dawson and Tierney, 1967) proposed a dual track career progression model for Air Force logisticians. There have been several other AFIT-generated career progression models that have attempted to expose

Air Force logisticians to the broader spectrum of logistics experience.

Stovepiping is a term used to describe this specialization within logistics. Stovepiping occurs when an officer enters into one of several logistics career fields and then progresses through his or her career in that one field. Stovepiping is a consequence of not having a formal, identifiable career development plan to develop logisticians with a broad base of logistics skills, knowledge, and experience. Lt. General Marquez, former Air Force Deputy Chief of Staff for Logistics and Engineering, stated, that as a result of stovepiping, many senior Air Force logisticians are "unprepared to manage the totality of our complex logistics systems" (Marquez, 1984). Logistics leaders have recently reevaluated the way logisticians become prepared to assume their responsibilities in an ever more complex environment.

As military systems become more sophisticated, the responsibilities of the military logistician have become more complex. This complexity is compounded by two developments. First, defense budgets are not projected to increase anytime in the immediate future. Second, logistics support costs are now a higher percentage of the total life cycle costs for weapon systems than they have been in the past (Lloyd, 1990).

The military logistics leader has the formidable challenge of managing large amounts of materials, financial assets, and

personnel in an environment that includes several logistics disciplines. As a result, the logistics leader must be a system integrator. The move toward integrating various logistics disciplines recognizes that each discipline impacts every other discipline. This integration attempts to capture the synergy inherent in the logistics process. A broad-base of logistics training and experience ensures that the logistics officer is aware of this larger picture (DeVault, 1995). Perhaps more important are the skills needed to keep the picture in focus and improve Air Force capabilities.

Air Force logisticians have a large role in planning and managing the central Air Force resources needed to provide and sustain combat capability. For decades, logisticians have debated about which qualifications and experience best prepare officers to be effective logistics leaders within their respective disciplines. The core of this debate has centered on whether logisticians should be specialists or generalists. There is no question that the day-to-day operations of logistics specialties require specialized technical expertise. Logisticians have long recognized that the complexities of logistics demand a class of highly specialized managers/leaders.

In recent years, logistics leaders have focused on how we should develop these logistics officers to ensure combat capability. In 1993, Lt. General Nowak, Air Force Deputy Chief of Staff for Logistics, acknowledged that the current logistics

career development did not effectively prepare logistics officers for senior logistics positions. He stated, "As we reduce our manpower and infrastructure, we must raise logisticians who understand the interrelationships between maintenance, supply, and transportation...Logisticians who are broad-based and understand more than one aspect of the logistics process" (DeVault, 1995).

General Nowak formed an Air Staff working group to study and evaluate a potential consolidation of the logistics discipline consolidation. Member of the working group represented all major commands (MAJCOMS) and all logistics disciplines. In April 1994, the Logistics Board of Advisors (BOA) approved the basic concept. The working group's final approach toward the consolidation was approved in a November 1994 BOA meeting after a complete review of the consolidation rules, guidelines, procedures, concepts and training.

Implementation began on 31 October 1995 (DeVault, 1995).

The new logistics career path emphasizes cross-flow and training into multiple disciplines. This cross-flow is intended to provide field grade officers with the broad-base of knowledge, skills and experience that will enable them to effectively manage complex logistics activities. New logistics officers will accumulate experience in at least two disciplines. Company grade officers must have sufficient depth of experience (no less than four years) in one discipline before they move on

to another discipline. The officer must have no less than two years of experience in this second discipline. Once they have sufficient logistics experience, these officers will be eligible for the Logistician Air Force Specialty Code (AFSC). The intent of this new career path is to provide both the depth and breadth required for intermediate and senior positions (DeVault, 1995).

Training has been revised to facilitate the new career path. It concentrates on integrated logistics. A short core block of instruction of all other disciplines will be included in initial technical training for each AFSC. Before an officer can cross-flow into another discipline, he or she must take a condensed functional area course, or bridge course. Later in their careers, officers attend the Advanced Logistics Officers Course (ALOC). The ALOC focuses on the integrated logistics processes at unit and staff levels, wholesale and retail logistics, the acquisition process, and the interrelationships and intricacy of joint operations. This course must be completed prior to the awarding of the Logistician AFSC and enrollment is open only to field grade officers (DeVault, 1995).

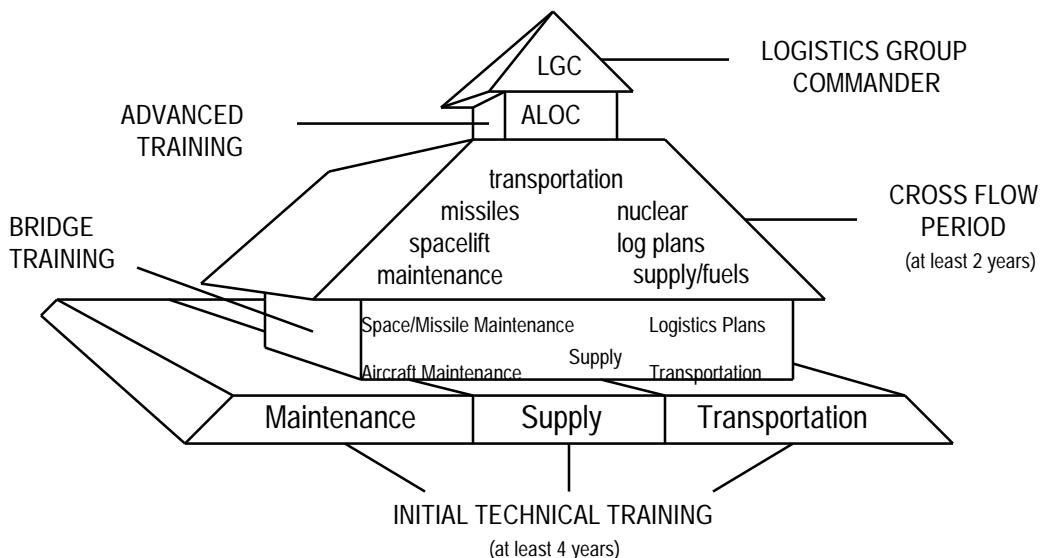


Figure 2. Logistics Progression Pyramid (DeVault, 1995)

In light of these developments, there is a need to reexamine the role that AFIT/LA's graduate logistics management programs play in preparing officers for these changes. The need to further tailor graduate logistics education is even more critical because these new logistics leaders will not be technicians. Instead, they will be managers in the truest sense, controlling and directing diverse logistics functions.

Thus, there is a change in emphasis from technical proficiency to managerial proficiency. It is appropriate to examine the managerial performance requirements of logistics commanders. Management researchers have taken different approaches toward identifying and explaining managerial performance. Research of managerial work and performance began in 1916 with Fayol's work on industrial and general

administration. In this pursuit, researchers have taken three general approaches: (a) identifying the traits and skills of managers; (b) explaining the decision-making processes of managers; (c) describing the functions, roles and behaviors of managers.

Traits and Skills Approach

During the 1950s, researchers tried to identify personal traits or qualities associated with effective management. Results were unimpressive. In fact, little evidence exists to support the idea that traits strongly correlate with managerial performance (Martin, 1983). But there has been a trend to use specific skills and abilities in the development of personnel selection procedures.

Decision-Making Approach

Researchers have studied the decision-making functions of managers in another approach to explaining the manager's job. Various decision-making models have been proposed in order to explain how decisions are made. Many of these models have focused on the decision-making process of managers under ambiguous conditions. However, this work is not useful for developing a comprehensive model of managerial performance that can be applied to a wide range of managerial applications.

Functions, Roles, and Behaviors Approach

Studies by Fayol (1916) and Gulick (1937) were among the earliest to identify specific managerial functions. Fayol

introduced five basic managerial functions - planning, organizing, coordinating, commanding, and controlling. Another pioneer, Gulick, described managerial work in terms of planning, organizing, staffing, directing, coordinating, reporting, and budgeting. Perhaps the most important contribution of this early work was the standardization of management terminology (Mackenzie, 1969: 87). Since this early work on managerial roles and functions, there has been considerable research directed toward identifying managerial behavior.

Borman and Brush's (1993) work is one of the most comprehensive studies of managerial performance requirements. They summarized the results of 26 studies and identified 18 key behavioral "dimensions" of management performance requirements. They concluded that the 18 behavioral dimensions fit into four broad mega-dimensions of managerial performance requirements.

This research is clearly applicable to Air Force logistics and the professional development of logistics officers. A strength of their research is that it goes beyond the examinations of one organization or one managerial job. Unlike previous studies of managerial performance which were based on a single organization and had sample sizes of fewer than 100 managers, Borman and Brush used large samples sizes from many organizations. Prien and Ronan (1971) and Cambell et al. (1970) criticized the results of such studies as being too narrow and job-specific. To arrive at a basic set of dimensions, Borman and

Brush collected and summarized the content of 246 dimensions. This included 19 empirically derived dimension sets from unpublished work and 7 published studies. These pooled dimension sets are directed toward several managerial jobs, not just one (Borman and Brush, 1993).

In addition, this research utilizes the critical incidents technique, which it perhaps the best method of capturing vital, performance-related managerial behavior. This performance orientation focuses on identifying behaviors that distinguish between poor job performance and effective job performance (Campbell, Dunnette, Lawler, & Weick, 1970). In one of the most cited managerial performance studies, Flanagan (1951) examined over 3,000 critical incidents involving US Air Force officers' performance. Flanagan found 6 dimensions that appear to describe managerial performance. Table 1 shows the correspondence between Flanagan's 6-dimension set and Borman and Brush's 18-dimension set. Thus it seems likely that Borman and Brush's dimensions capture the aspects of performance that are relevant for military logisticians. However, it is still necessary to evaluate their importance in the new logistics environment.

TABLE 1
**CONTENT MATCHES BETWEEN FLANAGAN'S (1951) AND
BORMAN AND BRUSH'S (1993) DIMENSIONS**

Flanagan's Dimensions	Borman and Brush Dimensions
Handling administrative detail	Communicating effectively; Administration and paperwork
Supervising personnel	Guiding, directing, and motivating subordinates; Training, coaching, and developing subordinates; Maintaining good working relationships; Coordinating subordinates and other resources; Staffing; Delegating
Planning and directing action	Planning and organizing; Decision making/problem solving
Accept organization responsibility	Maintaining good working relationships; Coordinating subordinates and other resources; Organizational commitment
Accept personal responsibility	Maintaining good working relationships
Proficiency in MOS	Technical proficiency; Persisting to reach goals

Source: Borman and Brush (1993)

Flanagan's work points out the importance of asking people who are most knowledgeable about job requirements - incumbents who know about the factors that would contribute or detract from their own performance. For the purpose of this research the most appropriate group of managers would be officers presently serving as logistics group commanders.

III. Method

A survey was developed to obtain senior logistician feedback on the importance of types of performance, experience, and advanced logistics management education.

Sample and Procedure. A total of 171 senior military logisticians voluntarily participated in this survey by rating the importance of types of performance, experience, and advanced degree knowledge. 70 responses were from Colonels; 41 of these were logistics group commanders. The remaining 101 responses were from Lieutenant Colonels. Eighteen of the survey responses were women and 153 were men. 15 of the respondents were non-white, 152 were white and 4 are unknown. The average respondent was 45 years old, with 22.8 years in the military and 17.7 years experience in logistics.

TABLE 2
SAMPLE SIZE FOR EACH DEMOGRAPHIC CATEGORY

Demographic Category		Sample Size
Rank	Colonel	70
	Lieutenant Colonel	101
Logistics AFSC	Aircraft Maintenance	46
	Space/Missile Maintenance	8
	Supply	9
	Transportation	5
	Logistics Plans	10
	Logistician	41
	Logistics Group Commander	41
	Other	11
Sex	Male	153
	Female	18
Race	White	152
	Non-white	15
	Unknown	4
Masters Degree	Logistics from AFIT	33
	Logistics from civilian university	7
	Engineering	4
	Behavioral Science	13
	Business	55
	Humanities	11
	Sciences	10
	Other	33
	None	5

Survey Instrument. The first part of the survey asked respondents for demographic data, such as sex, age, race, time in service, time in logistics, area of Master's Degree study, etc. The second section asked the respondents how much time they spent

working with people from other logistics specialties. The third section includes questions that ask the respondents to judge the value of having an Air Force-specific logistics management advanced degree program. The value of an this advanced degree program was rated on a six-point Likert scale with answers ranging from "1 = No value to 6 = Extremely valuable."

The fourth section consists of 31 questions that ask the respondent to rate the importance of various types of performance. The types of performance were rated on a six-point Likert scale ranging from "1 = Not important at all to 6 = Extremely important." The types of performance were derived from 15 of 18 dimensions developed by Borman and Brush [1993]. The dimensions of Administration and paperwork, Staffing, and Selling/Influencing were not included in this survey. These dimensions represent managerial responsibilities that are not normally assumed by logistics group commanders. These three performance categories were not directly relevant for the evaluation of logistics management education either.

Next, in the fifth section, respondents judged the importance of various types of knowledge gained from advanced degree program in logistics management. The same six-point scale was used as on the previous section. Respondents judged the importance of experience and 11 areas of a graduate logistics management curriculum. Lastly, in the sixth section respondents

rated the importance of experience in the five basic specialties on the same 6 point Likert scale.

Analyses. The first set of analyses involves managerial performance from Borman and Brush's (1993) 18 dimensions and four mega-dimensions of performance. Reliability analysis was done on the four mega-dimensions of performance requirements. Alphas were computed as an index of internal consistency. Next, mean importance ratings for both the mega-dimensions and the 15 individual dimensions were calculated.

The second element of analysis involves the educational dimensions. Mean importance ratings were used to determine the types of non-technical knowledge that are most important in managing logistics activities. Two questions measured each graduate knowledge dimension. Correlation between these two questions were used as a measure of reliability within the dimensions.

The last aspect of the analysis tried to determine which types of experience are most important for managing logistics activities. Mean importance ratings of job experience were calculated. In addition, the mean hours that respondents spent working with the various specialties was calculated. Emphasis was given to the responses of officers presently serving as logistics group commanders because these officers are in the best position to know what is required to prepare an officer for their job.

IV. Results

This chapter describes the results obtained in the analysis conducted on the performance dimensions, knowledge categories, and experience dimensions.

Performance Dimension Reliabilities

Reliability analysis indicated the four mega-dimensions of managerial performance requirements used for the development of this survey had adequate reliability. The Cronbach's alphas shown in Table 3 show a considerable degree of consistency.

TABLE 3
PERFORMANCE DIMENSION RELIABILITIES

Managerial Performance Groupings	Alpha Reliabilities
I. Interpersonal dealings and communication	.70
II. Leadership and communication	.63
III. Technical activities and the "mechanics of management"	.81
IV. Useful personal behavior and skills	.66
Notes: N=171	

Performance Dimension Mean Ratings

The first objective of this study was to identify the type of performance behaviors Air Force logisticians view as most important to effectively managing diverse logistics activities. Mean importance ratings for performance items describing general

managerial behavior are shown in Table 4. Two questions are used to measure each dimension. The mean ratings represent the within-dimension value of these managerial performance items. The mean scores for the total sample ranged from 3.34 for collecting and interpreting data to 5.57 for communicating effectively on a 6-point scale (N=171 respondents). Communication skills and crisis handling skills were consistently rated very high. Data interpretation skills and maintaining technical proficiency were consistently rated the lowest.

TABLE 4
**MEAN IMPORTANCE RATINGS OF MANAGERIAL PERFORMANCE DIMENSIONS
BY AFSC**

Managerial Performance Mega-Dimensions	Log Group Commander	Aircraft Maintenance	Logistician	Combined AFSCs	Total
Communicating effectively	5.63	5.50	5.61	5.53	5.57
Handling crises and stress	5.51	5.41	5.39	5.41	5.43
Maintaining working relationships	5.32	5.08	5.20	5.24	5.20
Decision-making/problem-solving	5.16	4.96	4.84	5.15	5.02
Guiding, directing, motivating	5.15	5.00	4.90	5.09	5.03
Coordinating subordinates/resources	5.02	4.76	4.88	5.01	4.92
Representing the organization	5.02	4.63	4.50	4.85	4.75
Persisting to reach goals	5.02	4.87	4.98	5.03	4.97
Delegating	4.93	4.66	4.85	5.12	4.89
Planning, organizing	4.91	4.46	4.41	4.70	4.62
Monitoring and controlling resources	4.87	4.63	4.76	4.82	4.77
Training, coaching, developing	4.72	4.63	4.55	4.71	4.65
Organizational commitment	4.54	4.45	4.17	4.36	4.38
Maintaining technical proficiency	3.41	3.87	3.49	3.81	3.66
Collecting and interpreting data	3.00	3.42	3.30	3.62	3.34

NOTES: Combined AFSCs consist of space/missile maintenance, transportation logistics plans, supply, and other.
 N=41 for Log Group Commanders; N=46 for Aircraft Maintenance;
 N=41 for Logistician; and N=43 for Combined AFSCs.
 Items were rated on a 6 point scale ranging from 1 = Not important at all to 6 = Extremely important.

These results were consolidated into the four broad mega-dimensions of manager performance identified by Borman and Brush (1993) as representing a broad overarching structure of managerial performance requirements. The mean ratings in Table 5 represent the within-grouping value of these managerial performance items. The mean scores for the sample ranged from 4.38 for technical activities and "mechanics of management" to 5.17 for interpersonal dealings and communication. Again, this is on a 6-point scale (N=171). In separate Analyses of Variance

(ANOVAs), for each performance grouping the differences among the means by job were not statistically significant ($p < .05$).

TABLE 5
MEAN IMPORTANCE RATINGS OF PERFORMANCE GROUPINGS BY AFSC

Managerial Performance Groupings	Log Group Commander	AFSC				Total
		Aircraft Maintenance	Logistician	Combined AFSCs		
I. Interpersonal dealings and communication*	5.33	5.07	5.10	5.21	5.17	
II. Leadership and supervision*	5.16	4.95	4.99	5.11	5.05	
III. Useful personal behavior and skills*	5.02	4.91	4.85	4.93	4.93	
IV. Technical activities and the "mechanics of management"*	4.38	4.33	4.28	4.54	4.38	
NOTES: Combined AFSCs consist of space/missile maintenance, transportation, logistics plans, supply, and other. N=41 for Log Group Commanders; N=46 for Aircraft Maintenance; N=41 for Logistician; and N=43 for Combined AFSCs. Items were rated on a 6 point scale ranging from 1 = Not important at all to 6 = Extremely important. * denotes no significant differences in each dimension by AFSC at the $p < .05$ level.						

Educational Dimension Reliabilities

Two questions are used to measure each dimension. The correlation of these questions provide an estimate of the dimensions' internal consistency. They indicate a considerable degree of consistency within the education dimensions. These reliabilities are provided in Table 6.

TABLE 6
EDUCATION DIMENSION RELIABILITIES

Education Dimension	Correlations
Supply Theory	.78
Contracting	.77
Total Quality	.76
Acquisition	.74
Accounting	.67
Data Interpretation	.62
Economics	.57
Funding	.56
Computers	.39
Notes: N=171	

Education Dimension Mean Ratings

The second objective of this study was to determine the types of non-technical knowledge that are most important in managing logistics activities. Mean importance ratings for these items describing graduate logistics management curriculum are shown in Table 7. The mean scores for the total sample range from 4.26 to 2.36 on a 6-point scale (N=171). Separate Analyses of Variance (ANOVAs) for each education dimension were accomplished to test differences in mean importance across jobs. The differences were not statistically significant except for acquisition, contracting, and funding ($p < .05$). The acquisition and funding were rated as less important by officers presently serving as logistics group commanders or aircraft maintenance officers than those in other logistics areas, while contracting was rated highest by the combined AFSC group and lowest by aircraft maintenance officers. These differences probably reflect differences in the importance of these areas to the

various disciplines. However, what is more remarkable is the degree of consistency on 7 of the 10 items. Supply theory, Total quality, Interpreting data, and Computers receive consistent and strong support.

TABLE 7
MEAN IMPORTANCE OF EDUCATION DIMENSIONS BY JOB

Education Dimension	Log Group Commander	Aircraft Maintenance	Logistician	Combined AFSCs	Total
Supply Theory*	4.35	4.08	4.22	4.41	4.26
Contracting	3.89	3.50	3.82	4.41	3.90
Total Quality*	3.77	3.60	3.72	3.85	3.73
Funding	3.72	3.65	4.09	4.39	3.96
Interpreting Data*	3.72	3.84	4.23	3.98	3.94
Computers*	3.63	3.90	4.09	4.24	3.97
Acquisition*	3.01	3.48	3.94	3.84	3.57
Statistics*	2.98	3.24	3.50	3.28	3.25
Accounting*	2.32	2.46	2.47	2.87	2.53
Economics*	2.12	2.34	2.31	2.65	2.36

NOTES: Combined AFSCs consist of space/missile maintenance, transportation, logistics plans, supply, and other.
N=41 for Log Group Commanders; N=46 for Aircraft Maintenance; N=41 for Logistician; and N=43 for Combined AFSCs.
Items were rated on a 6 point scale ranging from 1 = Not important at all to 6 = Extremely important.
* denotes no significant difference in each dimension by AFSC at the p<.05 level.

Experience Mean Ratings

The third objective of this study was to determine which experience is most important managing logistics activities. Mean importance ratings for various types of functional experience are in Table 8. The mean scores for the total sample ranged from 3.12 for space/missile maintenance to 5.17 for aircraft maintenance on a 6-point scale (N=171).

TABLE 8
MEAN IMPORTANCE OF JOB EXPERIENCE BY JOB

Experience Dimension	AFSC				Total
	Log Group Commander	Aircraft Maintenance	Logistician	Combined AFSCs	
Aircraft Maintenance	5.22	5.48	4.95	4.99	5.17
Supply	4.80	4.63	4.54	4.65	4.66
Transportation	4.24	3.89	4.07	4.39	4.15
Logistics Plans	4.05	3.87	4.02	4.47	4.10
Space/Missile Maintenance	2.38	3.41	2.90	3.73	3.12

Notes: The combined AFSCs category consists of space/missile maintenance, transportation, logistics plans, supply, and other.

N=41 for Log Group Commanders; N=46 for Aircraft Maintenance; N=41 for Logistician; and N=43 for Combined AFSCs.

Items were rated on a 6 point scale ranging from 1 = Not important at all to 6 = Extremely important.

Additional Findings

The average number of hours that the respondents spent working with their own and other logistics specialties was also examined. Table 9 illustrates this point and gives a picture of how much time logisticians spend working outside of their AFSC. As evidenced by the number of hours they spend with logistics specialties, logistics group commanders divide their attention among the logistics specialties. Results suggest the need for experience in all four areas is critical with Maintenance, Supply, and Transportation occupying most of the logistics group commander's time (87%). Additionally, the distribution of time appears to be different for logistics group commanders and incumbents in other jobs. This provides some evidence that

logisticians were unlikely to gain the broad experience they would need as logistics group commanders if they stay solely in their own discipline. As expected, they appear to spend time in either aircraft maintenance or space/missile maintenance depending on the type of unit they command. In addition, the commanders rated experience in each of the five basic specialties high. Only one was rated below 4 on the 6-point scale - space/missile maintenance. However, commanders in space or missile units rated this specialty much higher - 5.33 versus 2.38 for commanders in flying units.

TABLE 9

MEAN HOURS PER WEEK SPENT WORKING WITH JOB SPECIALTIES BY AFSC

Background of Respondent	AFSC				
	Log Group Commander	Aircraft Maintenance	Logistician	Combined AFSCs	Total
Maintenance	22.01	27.79	13.94	11.80	19.04
Supply	13.07	5.89	7.95	8.15	8.67
Transportation	11.83	2.17	2.88	5.63	5.53
Logistics Plans	7.12	3.55	5.57	6.48	5.63

Notes: The combined AFSCs category consists of space/missile maintenance, transportation, logistics plans, supply, and other.
N=41 for Log Group Commanders; N=46 for Aircraft Maintenance; N=41 for Logistician; and N=43 for Combined AFSCs.

As expected, respondents rated experience in those functions that they spent time with as higher in importance than those functions in which they spent little or no time. Table 10 shows these positive correlations between rating a specialty important and working with that function. This provides evidence

that broader experience is associated with different ideas about what is important for mission accomplishment.

TABLE 10

CORRELATIONS BETWEEN HOURS SPENT WORKING WITH JOB SPECIALTIES AND RATED IMPORTANCE OF JOB EXPERIENCE

Rated Importance of Job Experience	Hours				
	Aircraft Maintenance	Space/Missile Maintenance	Supply	Transportation	Logistics Plans
Aircraft Maintenance	0.20	-0.03	-0.01	-0.03	-0.03
Space/Missile Maintenance	-0.13	0.32	-0.07	-0.12	0.05
Supply	0.05	-0.05	0.26	0.13	0.04
Transportation	-0.10	0.04	0.20	0.16	0.06
Logistics Plan	-0.18	0.04	-0.02	-0.03	0.23

V. Discussion

Conclusions

Experience. As stated earlier, the new career progression of logistics officers includes experience in at least two logistics specialties. The expert group for this thesis is the logistic group commanders. They should know better than any other group what is essential to successfully manage and integrate diverse logistics activities. This research shows that logistic group commanders spend time with multiple specialties. These commanders also rate each of the four specialties high. Evidence of the old, stovepiped career progression model would include finding that the logistics group commanders did not divide their time and energy among the various functions, but spent nearly all their time with a single function.

Managerial Performance. This research supported the idea that logistic group commanders are less technical experts and more general managers. Technical activities and the mechanics of management were rated the lowest of the four Borman and Brush managerial performance mega-dimensions. Of the 15 dimensions that represent these mega-dimensions, maintaining technical proficiency was rated second lowest with a mean score of 3.41 on a 6-point scale. This logistics commander score was lower than the scores from the three other groups of respondents, further indicating that technical proficiency becomes less important as one assumes higher level positions.

Whereas the technical activities mega-dimension averaged 4.38 by commanders, the other three broad mega-dimension have mean importance ratings of over 5. Each of these groupings reflect more general management performance and less technical performance than the technical activities grouping.

Knowledge Dimensions. The knowledge dimensions derived from a logistics management curriculum tend to fall into two groups, one rated low and one rated high in preparing logisticians for senior leadership positions. The group rated higher in importance had a mean rating from the commanders that ranged from 4.35 to 3.63 and included: supply, contracting, funding, collecting and interpreting data, total quality, and computers. The group of dimensions that were rated low by the commanders had a mean rating that ranged from 3.01 to 2.12 and included: acquisition, statistics, accounting, and economics. Although these knowledge dimensions are rated lower in importance, it is difficult to conclude that they are altogether irrelevant for preparing officers for senior positions. Only contracting, funding, and acquisition dimensions were statistically different by job. It appears the funding and acquisition education requirements are less important to the logistic group commanders than to the other groups.

Implications

The Air Force Institute of Technology's School of Logistics and Acquisition is the Air Force's graduate school of technical

management. The mission of the school is to provide Air Force and DOD customers with managerial tools and techniques that enable and enhance their ability to accomplish their respective missions. One component of the AFIT mission is to plan, develop, and conduct graduate programs to satisfy the technical management needs of acquisition, systems, and logistics groups throughout the Air Force. Each of the graduate management programs offered by AFIT has been developed to enhance the ability of the student to accomplish specific and identifiable education objectives. This research supports enhancing or further concentration on the following educational objectives in priority of importance. These recommendations are derived from the feedback received from the logistics group commanders on managerial performance and specific educational dimensions.

Of the four broad performance mega-dimensions identified by Borman and Brush, Interpersonal dealings and communication received the highest ratings (see Table 5). Included in this mega-dimension are the dimensions 1)Using effective written and oral communication, 2)Representing the organization, and 3)Maintaining good working relationships. Table 4 indicates the scores for these individual dimensions. Experience in logistics prepares officers to communicate effectively and to maintain working relationships. However, graduate logistics education can help make logisticians more effective in meeting these managerial requirements. For example, the thesis requirement and

communication courses are AFIT requirements that address these areas. Core management theory and behavior courses and electives in leadership and strategic management also appear to be critical in preparing officers for managerial performance in representing the organization and maintaining good working relationships as well as the leadership and supervision dimension which received the second highest ratings (see Table 5).

Included in this grouping are the dimensions 1) Guiding, directing, and motivating subordinates 2) Maintaining good working relationships, and 3) Coordinating subordinates and other resources to get the job done. Table 4 indicates the scores for these individual dimensions. Undergraduate degree programs and logistics experience only go so far in preparing officers for leadership and supervision roles in logistics. A graduate logistics education also provides important knowledge and preparation for these managerial requirements. Core management theory and behavior courses such as ORSC 520/542 are designed for students to apply the concepts and techniques of management/organization theory and organization behavior to the management of complex and functionally diverse organizations.

Of the four mega-dimensions identified by Borman and Brush, Useful personal behavior and skills were rated the second lowest (see Table 5). Included in this mega-dimension are the dimensions 1) Persisting to reach goals, 2) Handling crises and stress, and 3) Organizational commitment. Table 4 indicates the

scores for these individual dimensions. Character and job experience probably take a lead role in preparing an officer for these managerial requirements. Again, general management and leadership courses give students the knowledge to apply management techniques and skills.

Of the four broad performance mega-dimensions identified by Borman and Brush, Technical activities and the 'mechanics of management' received the lowest ratings. Table 5 shows that this grouping was rated lowest of the four groupings. Included in this mega-dimension are the dimensions 1)Decision-making/problem-solving, 2)Delegating, 3)Planning and organizing, 4)Monitoring and controlling resources, 5)Maintaining technical proficiency and 6)Collecting and interpreting data. Table 4 indicates the scores for these individual dimensions. The dimension Decision-making/problem-solving is represented by the courses LOGM 325 AND OPER 501/502/526. Delegating, Planning and organizing, and Monitoring and controlling resources dimension are represented by the core management theory and behavior courses ORSC 520/542 and AMGT 610 and AMGT 336/610. The data collection and interpretation are represented by the courses STAT 525 and 535.

However, it must be noted that all officers in this study probably had developed fairly high levels of skills in these areas through their existing job experiences. Therefore, the value of additional emphasis in these areas probably was masked

by the nature of the sample. It is clear that the respondents viewed communication and general management skills as the most important.

Preparing officers for senior leadership positions requires a concerted effort toward providing relevant job experience and educational development. AFIT's specialized graduate logistics education plays an important role in this preparation. This work maps out the set of knowledge, skills, and experience that officers need to be successful as logisticians as an effort to ensure AFIT's continued effectiveness.

Appendix A: Senior Logistic Officer Survey

Survey Control Number: USAF SCN 96-35
Expiration Date: 31 December 1996

AFIT SPONSORED
SKILLS AND EXPERIENCE SURVEY
for
SENIOR MILITARY LOGISTICIANS



1. Please write your name and office symbol in the spaces provided below.

Name: _____ Office Symbol: _____

2. Please return the completed survey using the enclosed address labels.

**The success of this project depends on the accuracy of the information you provide.
Please do your best. Your responses will be kept confidential.**

**INFORMATION
ABOUT THE LOGISTICS SKILLS AND EXPERIENCE SURVEY**

Description of the study: The Air Force has consolidated logistics career fields at the Lieutenant Colonel level to ensure future Logistics Group Commanders and other senior logisticians have the broad-base of skills, experience, and knowledge that is needed to effectively manage logistics activities. By participating in this study, you can make an important contribution to these current efforts. Your participation in this survey is strictly VOLUNTARY. However, we need your help to define the set of skills, experience, and training required to lead vital logistics activities in the next century.

Confidentiality of your responses: This information is being collected for research purposes only. No one in your unit, base, or MAJCOM will EVER be allowed to see your individual responses.

Thank you for agreeing to participate in this research project.

PLEASE RETURN THIS SURVEY TO:

AFIT/GCM
ATTN: LT O'Malley
2950 P Street
WPAFB OH 45433-7765

Please answer the following questions about your background and job experience. This information will be used to develop a profile of the participants in this study. Your responses will be kept completely confidential.

1. What is your sex?

(Check one):

Male

Female

2. What is your race?

(Check one):

White

Black

Hispanic

Asian

Other: _____

3. What is your age in years?

4. What is your present grade?

5. How much AF time do you have?

6. What is your duty AFSC?

(Check one):

Aircraft Maintenance

Space/Missile Maintenance

Supply

Transportation

Logistics Plans

Logistician

Logistic Group Comdr.

Other: _____

7. Highest level of professional military education (PME)?

(Check one):

SOS

Air Command and Staff College

Air War College

Other: _____

8. How many total years of experience do you have in Logistics?

_____ years

9. Do you have a Masters Degree?

(Check one):

Yes

No

10. If you have earned a Masters Degree, what is it in?

Logistics from AFIT in residence program

Logistics from civilian university

Engineering

Behavioral Science

Business

Humanities

Sciences

Other: _____

11. If you received a MS in Logistics from a civilian university, who paid for it? (Check one):

AFIT/CIS

You (tuition assistance, out-of-pocket or GI Bill)

We need your help to understand how much people from different logistics functions work together. Please indicate how many hours you spend working with people from other logistics specialties in a typical or average week.

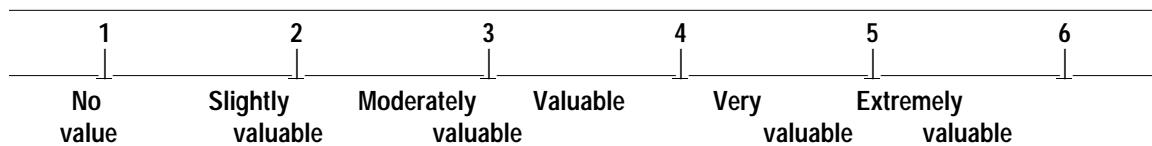
12. About how many hours do you spend working with people from the logistics specialties listed below each week?

Hours

- Aircraft Maintenance
- Space/Missile Maintenance
- Supply
- Transportation
- Logistics Plans

We need your help understanding what types of courses are better for preparing logisticians for senior positions.

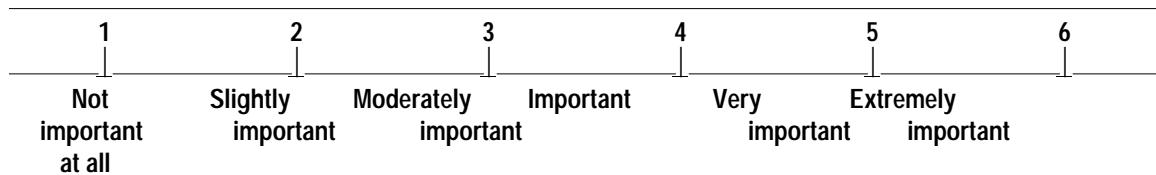
Please use the following scale to indicate how valuable each type of course is to a logistian.



How valuable is:

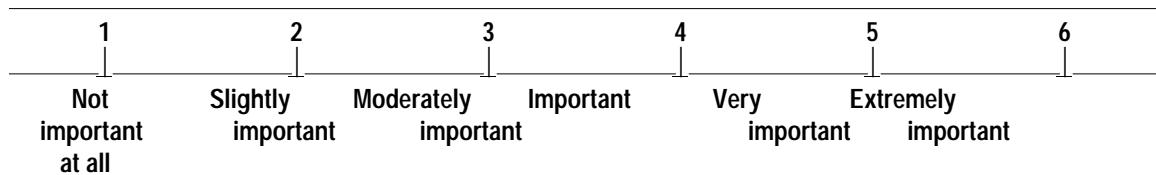
- 13. Instruction that focuses on specific Air Force systems
- 14. Instruction that focuses on the systems of private organizations.
- 15. Research to solve specific Air Force problems
- 16. Research to solve general academic research.
- 17. It to have instructors with extensive Air Force experience
- 18. It to have instructors with no Air Force experience.

Please indicate how important each type of performance is in your present job.
(If you are a student, please indicate its importance in your last operational job.)



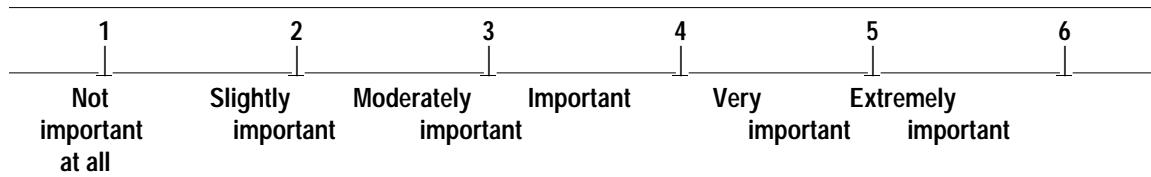
- 19. Communicating effectively
- 20. Giving subordinates appropriate performance feedback
- 21. Maintaining up-to-date technical skills
- 22. Persisting to overcome obstacles
- 23. Writing clearly
- 24. Ensuring subordinates receive needed training
- 25. Applying technical (as opposed to managerial) expertise on the job
- 26. Assessing the quality of technical reports
- 27. Responding to unexpected situations effectively
- 28. Negotiating for resources effectively
- 29. Problem solving in a crisis
- 30. Representing the organization effectively
- 31. Coordinating the efforts of functional work groups
- 32. Using innovative problem-solving techniques effectively
- 33. Working within policies and regulations
- 34. Using interpersonal skills
- 35. Motivating subordinates to give 110%
- 36. Evaluating research results
- 37. Supporting the organization loyally

Please indicate how important each type of performance is in your present job.
(If you are a student, please indicate its importance in your last operational job.)



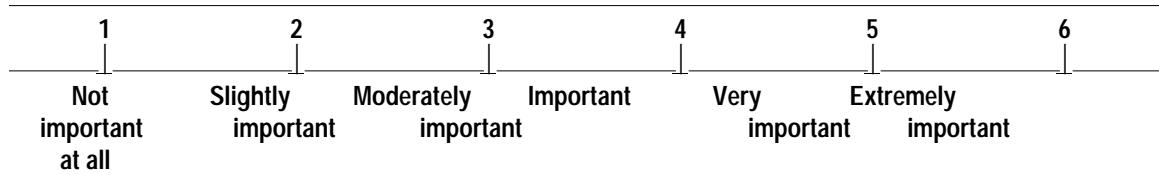
_____ 38. Showing respect for others
_____ 39. Allocating resources to achieve goals
_____ 40. Determining the quality of information
_____ 41. Developing long-range plans
_____ 42. Emphasizing deadlines and standards
_____ 43. Assigning subordinates duties and responsibilities in line with their abilities
_____ 44. Allocating resources to meet long-range plans
_____ 45. Identifying staff training needs
_____ 46. Maintaining an appropriate organization image
_____ 47. Making sound and timely decisions based on available information
_____ 48. Persisting with special effort to reach goals
_____ 49. Delegating responsibility and authority effectively

Please indicate how important knowledge in the following areas is in your present job. (If you are a student, please indicate its importance in your last operational job.)



_____ 50. Statistical techniques
_____ 51. Using the Internet
_____ 52. Total Quality goals
_____ 53. Methods for displaying data
_____ 54. Acquisition life cycle
_____ 55. Supply system processes
_____ 56. Contracting procedures
_____ 57. DOD funding process
_____ 58. Interest rates and inflation
_____ 59. Financial accounting standards
_____ 60. Financial record-keeping
_____ 61. Economic forces such as supply and demand
_____ 62. Different funding alternatives
_____ 63. Contract guidelines
_____ 64. Supply system capabilities
_____ 65. Key processes in acquisition
_____ 66. Total Quality Management (TQM) principles
_____ 67. Graph and chart interpretation
_____ 68. E-mail

Please indicate how important experience in the logistics functions listed below is in preparing military logisticians for senior positions. (This information will help us determine what types of experience and knowledge logistics leaders need.)



69. Aircraft Maintenance
70. Space/Missile Maintenance
71. Supply
72. Transportation
73. Logistics Plans

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Vita

Lt Thomas C. O'Malley was born on 05 April 1971 in Riverside, California. He graduated from Papillion-La Vista High School in 1989 and spent one year at Wentworth Military Academy in Lexington, Missouri. In 1990 he entered the United States Air Force Academy where he received a Bachelor of Science in Political Science and was commissioned on 01 June 1994.

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**A STUDY OF THE EDUCATIONAL, EXPERIENCE, AND MANAGERIAL
PERFORMANCE REQUIREMENTS FOR PREPARING LOGISTICS COMMANDERS**
1ST Lieutenant Thomas C. O'Malley Jr. (AFIT/GCM/LAR/94S-4)
Advisor: Lt Col James Van Scotter (LAR)

For some time, senior logistics leaders have been concerned that logisticians with experience in only one logistics function are unable to create and maintain an integrated, seamless logistics system. The Air Force has recently decided to consolidate logistics career fields at the Field Grade level to ensure future Logistics Group Commanders and other senior logisticians have the broad-base of skills, experience, and knowledge that is needed to effectively manage logistics activities. One important outcome of this consolidation is the adoption of a career progression model in which logistics officers will have experience in at least two logistics functions. Preparing officers for senior leadership requires a concerted effort toward providing relevant job experience and educational development. AFIT's specialized military graduate education plays an important part in this process. This work maps out the specific set of knowledge, skills, and experience that officers need to be successful as logisticians, ensuring AFIT's continued effectiveness.